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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DIETER FREITAG and PIN GO

Appeal 2015-007392
Application 12/182,590
Technology Center 1700

Before CHUNG K. PAK, JULIA HEANEY, and JEFFREY R. SNAY
Administrative Patent Judges.

HEANEY, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants[1] seek our review pursuant to 35 U.S.C. § 134(a) of a decision of the Examiner to reject claims 1–11 and 21 of Application 12/182,590.[2] We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

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[1] Appellants identify the real party in interest as FRX Polymers, Inc. App. Br. 3

[2] Final Action dated May 13, 2014 ("Final Act.") at 2. This decision also refers to the Specification filed July 30, 2008 ("Spec."), the Non-Final Office Action dated Nov. 29, 2013 ("Non-Final Act."), the Appeal Brief dated Sept. 29, 2014 ("App. Br."), the Examiner's Answer dated Oct. 30, 2014 ("Ans."), and the Reply Brief dated Dec. 24, 2014 ("Reply Br.").

BACKGROUND

The subject matter on appeal relates to a method for producing branched insoluble polyphosphonates. App. Br. 5. Claim 1, reproduced below from the Claims Appendix of the Appeal Brief, is representative of the claimed subject matter:

> 1. A method for producing branched insoluble polyphosphonates comprising:
>
> combining one or more phosphonic acid diaryl esters and one or more bisphenol in a reaction vessel to form a reaction mixture;
>
> adding an alkali catalyst to the reaction mixture;
>
> heating the reaction mixture for a first time under vacuum to a temperature where phenol begins to distill from the vessel and continuing heating until evolution of phenol has stopped; and
>
> heating the reaction mixture for a second time to a temperature where evolution of at least phenol has restarted and has stopped and a resulting branched insoluble polyphosphonate been generated that is partially or completely insoluble in methylene chloride or tetrahydrofuran after 8 hours of immersion;
>
> wherein heating is carried out for a total of about 12 hours to about 16 hours.

THE REJECTION

Claims 1–11 and 21 are rejected under 35 U.S.C. § 103(a) as unpatentable over Schmidt.[3]

DISCUSSION

Schmidt discloses a process for production of thermoplastic, branched aromatic polyphosphonates. Schmidt 5:4–6. The Examiner acknowledges

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[3] Schmidt et al., US 4,415,719 issued November 15, 1983 ("Schmidt").

that Schmidt does not specifically describe claim 1's recited steps of heating for a total of about 12 to 16 hours, or heating until evolution of phenol has stopped, then restarting and stopping again during a second heating period. Non-Final Act. ¶¶ 11, 17. The Examiner finds, however, that Schmidt teaches the polymerization reaction can be continued until the desired molecular weight ranging from 11,000 to more than 200,000 is reached (Non-Final Act. ¶ 12, citing Schmidt 1:51–53, 1:59–2:9, 2:35–40, 7:30–34), and thus that total polymerization time (i.e., heating time) is a result effective variable. Non-Final Act. ¶ 13. As to the claimed steps of stopping, restarting and restopping the evolution of phenol during heating of the reaction mixture, the Examiner finds that Schmidt's process as described in Examples 1 and 2 is substantially similar to the process described in Example 5 of the Specification (Non-Final Act. ¶ 18), and therefore that "there is reasonable basis to conclude that, during the polymerization reaction suggested by Schmidt, evolution of phenol begins and stops … and then restarts and restops … in substantially the same manner" as recited in claim 1. *Id.* ¶ 19.

Appellants argue that the Examiner's rationale for extending Schmidt's heating time to at least 12 hours is not supported by evidence. App. Br. 6. Specifically, Appellants argue that the Examiner has failed to show that lengthening of polymerization time necessarily results in increased molecular weight, because Schmidt does not equate molecular weight to reaction time. Reply Br. 2. Rather, Appellants argue, a person of ordinary skill in the art would understand Schmidt's teaching that "the reaction is continued … until the required degree of condensation is reached" (Schmidt 7:30–34) as meaning that when evolution of phenol stops, one or more of the

reactants has been used up, the reaction has reached its conclusion, and no further reaction would be expected to happen. App. Br. 10; Reply Br. 2–3.

Appellants' argument is persuasive of reversible error. The Examiner has the initial duty of supplying the requisite factual basis for obviousness and may not "resort to speculation, unfounded assumptions, or hindsight reconstruction to supply deficiencies in [the] factual basis." *In re Warner*, 379 F.2d 1011, 1016–17 (CCPA 1967). Here, the findings underlying the determination of obviousness are based on unfounded assumptions because the Examiner has not identified any disclosure in Schmidt which shows or suggests that molecular weight increases as reaction time increases. The only disclosure of Schmidt relied upon by the Examiner to show a direct relationship between reaction time and molecular weight (Schmidt 7:30–34) does not establish that relationship. As Appellants' persuasively explain, Schmidt provides no teaching of continuing the polymerization reaction beyond the evolution of phenol (App. Br. 10); moreover, Schmidt teaches that polyphosphonates having molecular weights in the range relied upon by the Examiner (Non-Final Act. ¶ 12, citing Schmidt 2:35–40) are not made by increasing reaction time, but rather by modifying the polymer structure (i.e. incorporating additional monomeric units into the molecule). Reply Br. 3, citing Schmidt 2:35–4:63.

Accordingly, we conclude that the Examiner reversibly erred and has not established obviousness with respect to claim 1. We need not separately address Appellants' additional arguments for reversal of the rejection, or appealed claims 2–11 and 21, which depend from claim 1.

SUMMARY

We reverse the rejection of claims 1–11 and 21as unpatentable under 35 U.S.C. § 103(a).

REVERSED